

# **Notice of Allowability**

Application No.

10/769,165

Examiner

Deborah Malamud

Applicant(s)

PARK ET AL.

Art Unit

3766

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendments received 30 November 2006.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## **Attachment(s)**

- |  |  |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)   | 5. <input type="checkbox"/> Notice of Informal Patent Application                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|  | 9. <input type="checkbox"/> Other _____.   |

**DETAILED ACTION**

1. The examiner acknowledges the amendments received 30 November 2006.

Claims 1-21 are pending.

***Claim Objections***

2. In view of the amendments to claim 8, the examiner withdraws the objection to claim 9.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. In view of the amendments to the claims, the examiner withdraws the rejection of claims 1-21 under 35 U.S.C. 103(a) as being unpatentable over Yamanishi et al (U.S. 5,385,144) in view of Bourgeois et al (U.S. 6,126,611).

***Allowable Subject Matter***

5. Claims 1-21 are allowed.
6. The following is an examiner's statement of reasons for allowance:

Claim 1, as amended, is an implantable cardiac device comprising sensing circuitry to sense whether a patient is at rest, the sensing circuitry further being operative to sense cardiac electrical activity; and a sleep apnea detector to detect when a patient, who is at rest, is experiencing an episode of sleep apnea

and to differentiate between central sleep apnea and obstructive sleep apnea based on oscillation of a parameter of the cardiac electrical activity, the cardiac electrical activity comprising evoked responses over a plurality of respiration cycles. Claim 8, as amended, is an implantable cardiac device comprising a sensor that indicates rest; a sensor to sense a respiration-related parameter; a data acquisition system to acquire an intracardiac electrogram (IEGM) signal; a processor to detect an episode of sleep apnea based on changes in the respiration-related parameter and to differentiate between central sleep apnea and obstructive sleep apnea based on oscillation of a parameter of the IEGM signal over a plurality of respiration cycles. Claim 13, as amended, is an implantable cardiac device comprising sleep apnea detection means for detecting an episode of sleep apnea; data acquisition means for collecting an intracardiac electrogram signal; and classification means for classifying the episode as one of central sleep apnea and obstructive sleep apnea based on analysis of oscillation of a parameter of the IEGM signal over a plurality of respiration cycles. Claim 17, as amended, is a method implemented by an implantable cardiac device, the method comprising detecting an episode of sleep apnea; and classifying the episode of sleep apnea as either central sleep apnea or obstructive sleep apnea based upon oscillation of a parameter of an intracardiac electrogram (IEGM) signal over a plurality of respiration cycles.

It is well known in the art to provide sensing means to sense whether a patient is at rest, and to further sense cardiac electrical activity. It is also well

known to detect and diagnose a sleep apnea event based on these sensed data.

It is however neither explicitly taught nor obvious to one of ordinary skill in the art at the time of the invention to differentiate between central sleep apnea and obstructive sleep apnea based on an oscillation of a parameter of cardiac electrical activity over a plurality of respiration cycles.

7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Malamud whose telephone number is (571) 272-2106. The examiner can normally be reached on Monday-Friday, 9.00am-5.30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pezzuto can be reached on (571)272-6996. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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